Assistantship Overview
CNMI Technical Assistant – Ken Cochrane

Date of Submission: January 11, 2002
Period of Performance: October 1, 2001 – September 31, 2003
(Plans will be re-evaluated and updated as necessary July 2002)

Introduction

The Coastal Resources Management (CRM) Program was established by the Commonwealth of the Northern Mariana Islands (CNMI) in 1980 to promote the conservation and wise development of coastal resources. By statute, CRM is mandated with balancing the potentially conflicting management goals of the use and preservation of CNMI natural resources. This task is made more difficult by the large amount of geographic and descriptive information that must be considered in any management decision. Technological advances in Geographic Information Systems (GIS) make possible the use of desktop computers to store, manipulate, analyze, and display landscape information. CRM is committed to integrating GIS into current and future resource management and project permitting decisions. Active use of this capability will greatly improve CRM staff's ability to determine appropriate siting and environmental performance requirements of proposed developments.

With the intent to further develop GIS capabilities within the CNMI, the CRM has agreed to participate in the NOAA Coastal Services Center (CSC) multi-year Pacific region initiative. This initiative focuses on capacity building for the Pacific coastal zone management agencies approved under the Coastal Zone Management Act (CZMA) of 1972. As part of this initiative a Technical Assistant has been hired under the auspices of the Environmental Careers Organization (ECO) to work for two years within the CRM office. The Technical Assistant will work together with the Acting Administrator and GIS Manager for the CNMI CRM office to identify and implement appropriate GIS-related projects.

Project Objectives

To improve the general access and availability of CNMI's coastal resources information and to help CRM further develop GIS capabilities, three broad objectives have been established for this project:

1. <u>GIS-related projects</u>

   The Technical Assistant will participate on a number of GIS-related projects in order to support CRM activities. The Assistant will need to install and maintain all software provided by CSC (training of office staff to continue these activities is discussed further under Outreach and Training). Efforts to increase coral reef

protection will include: identifying, mapping and monitoring of non-point source pollution; developing a link between current permitting and a cadastral GIS to better enable compliance tracking and long-term planning; and, assist in the mapping of benthic habitats within the Saipan Lagoon. Development and management of GIS data will include: analysis of Ikonos imagery; implementation of metadata guidelines; and, inventory and assessment of existing GIS databases. Finally, the Assistant will participate in other GIS-related CRM operations as needed.

2. CSC support

   CSC has already provided the CNMI with two high-end GIS computers, two color printers, two Trimble Global Positioning System (GPS) receivers, vector and raster GIS software, a ten-day technical training for the CRM GIS Manager and Assistant at the CSC office in South Carolina as well as GIS training for other CRM staff. CSC has also begun efforts to resolve geodetic control issues and transformation algorithms. In addition, CSC has made available funds for the Assistant to participate in a number of additional training workshops and conferences each year. Funding for CRM staff to participate in additional trainings and conferences will also be made available as funds permit. CSC will also be asked to support (to the degree they are able) additional training and equipment needs identified by the CRM staff, including advanced applications beneficial to CRM operations. The Assistant will provide reports to CSC regarding the progress of the project as needed, and will generate appropriate transition documentation such that ongoing projects may be continued by CRM staff.

3. Outreach and training

   The Assistant will contribute towards general GIS capacity building within the CRM office by: training CRM staff in GIS, GPS and remote sensing technologies; and, ensuring that CRM staff are familiar with the necessary installation and maintenance of all software provided by CSC. The Assistant will also provide outreach in the following ways: training of staff from other relevant agencies in GIS, GPS and remote sensing technologies; coordinate with local schools and college to get CZM GIS projects in curriculum; help in establishing a local GIS Day; participate in ongoing GIS user's group; and, update existing web page with GIS related information.

Technical Approach

Task 1: Install equipment and software provided by CSC
Description: Set up computer system, connect printer, install Erdas Imagine and set up the license file, set up license file for ArcMap and configure GPS units for the proper datum/coordinate system for the CNMI.

Quality Assessment/Quality Control (QA/QC) methodology: All equipment and software tested with local data and working properly.

Task 2: Identify, map and monitor known non-point source pollution issues
Description: participate in non-point source pollution meetings, assist in identifying areas where non-point source pollution is a problem, map elements contributing to the pollution problem.
QA/QC methodology:

Task 3: Link current permit system with cadastral GIS
Description: Work with GIS Manager to determine appropriate ways to link current permit system with digital cadastral maps.
QA/QC methodology: A system is in place to link permit system with digital cadastral data.

Task 4: Contribute to benthic habitat maps
Description: Work with GIS Manager and CRM Marine Biologist to incorporate Ikonos imagery and GIS data towards the creation of current benthic habitat maps.
QA/QC methodology: A digital benthic habitat map in place.

Task 5: Analyze Ikonos imagery
Description: Work with GIS Manager to determine desired information layers that can be identified using the Ikonos imagery, use on-screen digitizing to create new ArcView shape files for each desired information layer, use GPS to collect further ground control as needed.
QA/QC methodology: Ikonos imagery geometrically corrected to a known and acceptable degree of accuracy, new shape files of desired features.

Task 6: Implement metadata guidelines
Description: Review NOAA metadata guidelines and use those guidelines to generate metadata guidelines appropriate to the CNMI, implement the new metadata guidelines.
QA/QC methodology: All GIS databases have associated metadata that follows the new guidelines and is as complete and as accurate as possible.

Task 7: Inventory and assess existing GIS databases
Description: Work with GIS Manager to determine existing GIS databases within CRM, work with collaborating agencies to determine locally available GIS layers, assess the accuracy and completeness (to the degree possible) of those data layers relevant to CRM activities.
QA/QC methodology: A listing will be made of known GIS layers and associated metadata.

Task 8: Provide Assistant with further training
Description: Assistant will attend required training workshops and conferences as well as participate in other relevant workshops and conferences as funding permits.
QA/QC methodology: All required trainings were attended.

Task 9: Provide progress reports to CSC
Description: A summary of progress will be provided to CSC and relevant authorities as required for the project.
QA/QC methodology: All required progress reports submitted.

Task 10: Generate transition documents
Description: Transition documents will be worked on throughout the project and completed before project completion, transition documents will address issues needed for the continuation of ongoing projects.
QA/QC methodology: A transition report will be available to CRM staff prior to termination of the project.

Task 11: Provide training to CRM staff
Description: Assistant will work with GIS Manager to create and implement a staff training that incorporates GIS, GPS and remote sensing.
QA/QC methodology: At least one staff training has been provided.

Task 12: Offer training to other agencies
Description: Work with GIS Manager to identify agencies interested in GIS, GPS and/or remote sensing information, provide training opportunities for those agencies.
QA/QC methodology: At least one training offered open to other agencies.

Task 13: Coordinate with local schools and college
Description: Identify teachers/professors within the local schools and college with an interest in GIS, GPS and/or remote sensing, work with those individuals to generate ideas for incorporating information on those technologies into local curriculum
QA/QC methodology: A contact list of interested teachers/professors and suggestions for incorporating GIS technology information into the curriculum.

Task 14: Help establish activities for a local GIS Day
Description: Establish a GIS Day task-force composed of local agencies using GIS technologies in order to identify appropriate activities for a local GIS Day and disseminate information.
QA/QC methodology: Task force established and activities organized for a GIS Day

Task 15: Participate in ongoing GIS user's group
Description: Assistant will attend GIS user's group meetings and contribute suggestions as appropriate.
QA/QC methodology: GIS user's group meetings attended.

Task 16: Update existing CRM web page
Description: Assistant will create a web page to display, at various scales, some of the ArcView shape files available within CRM and allow users to download those files.
QA/QC methodology: Web page created

Project Schedule

TASK NUMBER	EVENT	START DATE	FINAL PRODUCT DATE
1	Install equipment and software	11/02/01	01/01/02
2	Identify, map and monitor NPS pollution issues	01/08/02	09/01/03
3	Link current permitting system with GIS	02/04/02	09/01/03
4	Contribute to benthic habitat maps	03/01/02	08/01/03
5	Create new shape files from Ikonos imagery	03/01/02	03/01/03
6	Implement metadata guidelines	03/01/02	03/01/03
7	List of existing GIS layers and metadata	01/01/02	06/01/02
8	Assistant will attend required trainings	10/01/01	09/01/03
9	Progress reports to CSC	01/01/02	09/01/03
10	Transition documents	06/01/02	09/01/03
11	Organize a staff training	12/01/01	02/15/02
12	Offer training to other agencies	06/01/02	09/01/02
13	Coordinate with local schools and college	03/01/02	03/01/03
14	Help establish a local GIS Day	06/01/02	11/01/02
15	Participate in local GIS user's group	01/01/02	09/01/03
16	Update CRM web page	12/01/01	09/01/03

Travel Budget

EVENT	**LOCATION**	**DATE**	**COST ESTIMATE**
Project Travel Year 1			
Vessel Grounding Workshop	Guam	Feb	$1000
ArcINFO Training	Guam	June	$1000
Islands GIS Project Meeting	Guam	June	$1000
ESRI Conference	San Diego	July	$2500
Project specific travel			$6500
Project Travel Year 2			
GeoTools03	Charleston	January	$3000
Coastal Zone 03	Baltimore	July	$3000
Project specific travel			$6000

Required Resources
(As needed)

Approval Process

Island GIS Assistant Signature

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Kenneth Cochrane

Island CZM Program Manager Signature

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Joaquin Salas

Island GIS Project Lead Signature

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Douglas Mauro

NOAA Project Lead Signature

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Cindy Fowler